

WHAT IS CLAIMED IS:

1. A power saving apparatus for an assisting apparatus that uses power from a rotating member to assist the operation of a bicycle transmission, wherein the power saving apparatus comprises:

a rotating member engaging member that moves between a rotating member engaging position and a rotating member disengaging position;

a setting mechanism that sets the rotating member engaging member toward the rotating member engaging position; and

a power saving unit that saves power communicated between the setting mechanism and the rotating member engaging member when the setting mechanism attempts to move the rotating member engaging member into the rotating member engaging position and the rotating member engaging member encounters a force that resists the rotating member engaging member being in the rotating member engaging position.

2. The apparatus according to claim 1 wherein the power saving unit comprises a biasing mechanism that biases the rotating member engaging member toward the rotating member engaging position.

3. The apparatus according to claim 2 wherein the biasing mechanism allows the rotating member engaging member to move toward the rotating member disengaging position when the setting mechanism attempts to set the rotating member engaging member toward the rotating member engaging position and the rotating member engaging member encounters the force that resists the rotating member engaging member being in the rotating member engaging position.

4. The apparatus according to claim 3 wherein the biasing mechanism comprises a spring.

5. The apparatus according to claim 1 wherein the setting mechanism comprises:

a control cam;

a cam follower; and

wherein one of the control cam and the cam follower is coupled to the rotating member engaging member so that engagement of the cam follower with the control cam causes the rotating member engaging member to move toward the rotating member engaging position.

6. The apparatus according to claim 5 wherein the power saving unit comprises a power saving cam disposed in close proximity to the control cam.

7. The apparatus according to claim 6 wherein the cam follower can engage the control cam and the power saving cam.

8. The apparatus according to claim 7 wherein the power saving cam moves between a normal position and a power saving position, wherein the rotating member engaging member can move to the rotating member engaging position when the power saving cam is in the normal position.

9. The apparatus according to claim 8 wherein engagement between the power saving cam and the cam follower can move the power saving cam toward the power saving position.

10. The apparatus according to claim 9 wherein the power saving unit further comprises a biasing mechanism that biases the power saving cam toward the normal position.

11. The apparatus according to claim 10 wherein the control cam and the power saving cam are the same element.

12. The apparatus according to claim 11 wherein the biasing mechanism comprises a spring.

13. The apparatus according to claim 9 wherein the setting mechanism comprises a power communicating member that moves the rotating member engaging member so that the cam follower engages the control cam.

14. The apparatus according to claim 13 wherein the power communicating member moves the rotating member engaging member so that the cam follower engages the power saving cam.

15. The apparatus according to claim 14 wherein the cam follower moves the power saving cam toward the power saving position when the rotating member engaging member encounters the force that resists the rotating member engaging member being in the rotating member engaging position.

16. The apparatus according to claim 15 wherein the rotating member engaging member includes a first portion and a second portion, wherein the one of the control cam and the cam follower is disposed between the first portion and the second portion, and wherein the first portion includes a rotating member engaging surface.

17. The apparatus according to claim 16 wherein the rotating member engaging member rotates between the rotating member engaging position and the rotating member disengaging position.

18 The apparatus according to claim 17 wherein the second portion of the rotating member engaging member is coupled to the power communicating member.

19. The apparatus according to claim 18 wherein movement of the power communicating member causes the rotating member engaging member to rotate around the cam follower so that the rotating member engaging member rotates to the rotating member engaging position.

20. The apparatus according to claim 19 wherein the rotating member engaging member comprises a rotating member engaging lever having a first end and a second end.

21. The apparatus according to claim 19 wherein the power saving cam rotates between the normal position and the power saving position.

22. The apparatus according to claim 21 wherein the rotating member engaging member engages the power saving cam when the rotating member engaging member is in the rotating member engaging position.

23. The apparatus according to claim 22 wherein the rotating member engaging member comprises a rotating member engaging lever having a first end and a second end.

24. The apparatus according to claim 23 wherein the power saving cam comprises a power saving lever.

25. The apparatus according to claim 24 wherein the power saving lever has a first end and a second end, wherein the power saving lever rotates around the first end.

26. The apparatus according to claim 25 wherein the power saving unit further comprises a biasing mechanism that biases the second end of the power saving lever toward the normal position.

27. The apparatus according to claim 26 wherein the biasing mechanism comprises a spring.

28. The apparatus according to claim 1 wherein the rotating member engaging member rotates between the rotating member engaging position and the rotating member disengaging position.

29. The apparatus according to claim 28 wherein the power saving unit comprises a biasing mechanism that biases the rotating member engaging member toward the rotating member engaging position.

30. The apparatus according to claim 29 wherein the power saving unit comprises a power saving element that rotates between a normal position and a power saving position.

31. The apparatus according to claim 29 wherein the rotating member engaging member comprises a rotating member engaging link.

32. The apparatus according to claim 29 wherein the power saving unit comprises a power saving link.

33. The apparatus according to claim 29 wherein the rotating member engaging member comprises a rotating member engaging link, and wherein the power saving unit comprises a power saving link.

34. The apparatus according to claim 33 wherein the rotating member engaging link engages the power saving link to move the power saving link between a normal position and a power saving position.

35. The apparatus according to claim 34 wherein the rotating member engaging link rotates between the rotating member engaging position and the rotating member disengaging position, and wherein the power saving link rotates between the normal position and the power saving position.